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Prepared by:

Plant Industry Division

Weed Control Branch

Hon. H. E. STROM

Minister

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DR. E. E. BALLANTYNE

Deputy Minister

ALBERTA DEPARTMENT OF AGRICULTURE

THE USE OF SOIL STERILANTS IN WEED CONTROL

by

W. Lobay, Head

Weed Control and

Municipal-Plant Industry Programs Branch

Plant Industry Division

Soil sterilants (also called general vegetation control chemicals) act in the soil, killing existing vegetation and preventing plant growth. Because of cost the use of these materials is practical only on limited areas to kill and prevent the spread of such persistent perennial weeds as toadflax, quack grass, hoary cress, leafy spurge, Russian knapweed and field bindweed, or where it is desirable to prevent all plant growth for one or more years.

On the basis of their relative toxicity to vegetation and their persistence in the soil under various conditions the herbicides are classified in three groups.

INFORMATION ON SOME COMMONLY AVAILABLE SOIL STERILANTS

GROUP A — Non-selective. Provide relatively long term sterility (one or more years).

Trade Name (1)	Active Ingredient	Rate of Product (2) per 100 sq. ft.	Remarks
Atlacide (3)	Sodium Chlorate	5—7 lb. apply as spray	Contains fire retardent
Atrazine 50W (3)	Atrazine	2—3 oz. apply as spray	
Chlorea	Sodium Borate Sodium Chlorate Monuron	4—5 lb. apply dry	Not recommended for quack grass
Hyvar X (3)	Bromacil	1/2—3/4 oz. apply as spray	
Polybor Chlorate	Sodium Chlorate Sodium Borates	4—6 lb. apply dry or as spray	Not recommended for quack grass
Sodium Chlorate	Sodium Chlorate	3—4 lb. apply dry or as spray	Use with caution Is a fire hazard!
Ureabor 31	Borates TBA Monuron	2—3 lb. apply dry	Not recommended for quack grass

GROUP B — At the recommended rates of chemicals, most grasses are not killed. Have long term effect on broad-leaved plants.

Trade Name (1)	Active Ingredient	Rate of Product (2) per 100 sq. ft.	Remarks
Concentrated Borascu	Anhydrous Borax	6—7 lb. apply dry	
D Bor Granular	Sodium Borates 2,4-D	3—5 lb. apply dry	
Tordon 22K	Picloram	1—2 tsp. apply as spray (4)	Use only on non-crop land, permanent grass pastures and rangeland.
Tordon Beads or Borolin	Picloram	2—4 oz. apply dry (4)	Use only on non-crop land.

GROUP C — For quack grass control. Provide relatively short term sterility (1 to 3 months).

Trade Name (1)	Active Ingredient	Rate of Product (2) Per 100 Sq. Ft.	Remarks
Dowpon	Dalapon	1 oz. followed by cultivation in 2-3 weeks	Post-treatment cultivation essential for maximum control
TCA	TCA	3—4 oz. with cultivation, 4—6 oz. without cultivation	Tillage required 2-3 weeks after treatment for maximum control.

- (1) Sterilants are listed in alphabetical order. The mention of a trade name does not necessarily imply recommendation of or discrimination against a product.
- (2) On very sandy soils use one-half ($1\frac{1}{2}$) above mentioned rates for approximately equivalent results (except with sodium chlorate which leaches readily on such soils).
- (3) This herbicide is most effective against grasses and annual weeds. Where deep rooted herbaceous perennial weeds are also a problem, better results may be expected if this treatment is combined with picloram. (See (4)). Picloram by itself at these rates has no appreciable effect on established perennial grasses.
- (4) Tordon dosages are based on 1-2 lb. **active ingredient** per **acre**.

METHODS OF APPLICATION

The right quantity of material and uniform application over the weed-infested area are essential for maximum results.

Observe the following precautions carefully!

- (a) FOLLOW DIRECTIONS PRINTED ON THE LABELS OF THE CONTAINER.

- (b) For deep-rooted perennial weeds treatment should extend at least six feet beyond the outer edge of the patch in order that underground parts will not send up new shoots around the edge of the treated area.
- (c) Treated areas should be left undisturbed for at least one year. Follow-up applications may be required to completely destroy all weeds. Seedlings or new growth may be treated with heavy application of 2,4-D ester (16 to 32 oz. active ingredient per acre).

Application in Dry Form

The dry or granular form may be more conveniently applied but is more difficult to apply uniformly. For uniform application, half of the chemical should be spread going in one direction and the remaining chemical spread at right angles to it.

Dry or granular soil sterilants can be applied with a hand duster, a home-made shaker (e.g. a can with holes punched in the lid) or a hand spreader such as a cyclone grass seeder.

Application as a Spray

For sterilants which can be applied as a spray the chemical should be mixed with water according to the directions given on the container. Use sufficient water to dissolve or suspend the chemical completely and to provide adequate coverage of the area to be treated. For spraying, this generally requires at least one quart per 100 sq. ft.; for sprinkling, more is required.

TIME OF APPLICATION

Treatment is usually most effective when applied during spring and early summer and after the top growth has been removed by cutting. In some cases fall applications are more convenient and will give satisfactory results. The results may not be obvious until the following year.

CAUTION

Soil sterilants may kill trees and shrubs near treated areas since roots can extend under the treated surface and be affected by the chemical.

Sodium Chlorate is a **fire hazard**. The fire hazard is reduced if the chemical is applied in dry form.

Some sterilants are corrosive. They should not be left in the sprayer.

The sprayer and nozzle should be thoroughly cleaned, rinsed with clean water and dried immediately after use to avoid corrosion and deterioration of the sprayer unit.

ADDITIONAL INFORMATION

For more information consult your local District Agriculturist or Agricultural Fieldman or write to the Plant Industry Division, Alberta Department of Agriculture, Edmonton.

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